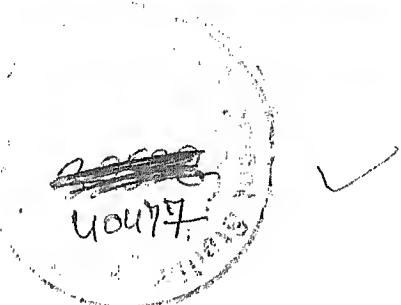


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***ISSUES AND OPTIONS OF INCREASING
LIVELIHOOD FOR MARGINAL FARMERS
IN UTTARANCHAL***



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EMERGING SITUATION OF FARMING SYSTEM:

(A) **LAND USE PATTERN**: A detail enquiry about the emerging situation in the pattern of land utilisation for different purposes revealed that the utilisation of land for the production of various crops is very low. Even it is decreasing at a significant level of 0.23 per cent per annum over the years due to the

influence of several fundamental elements, such as degradation of the quality of land leading to unwillingness of farming communities to engage in low return based agricultural activities, shifting occupational structure of employment and increasing out-migration of male labourforce outside state for generating incomes to meet the basic livelihood for their families.

- (i) The tendency of leaving land as fallow is consistently increasing among the farmers due to decreasing trend of fertility contains in it.
- (ii) Due to over exploitation of forests by the local people and forest mafias the land under forest cover is decreasing and as the consequences the land classified as barren and culturable waste has been significantly increasing in almost the mountain and hilly areas, largely in high altitude areas.

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UTTARANCHAL, a very small state, spread over an area of around 53.4 thousand sqr. Km., is one of the most underdeveloped states in India. The agricultural and its associated activities, including animal husbandry and fishing are forming the economic base and the main source of livelihood and employment for the people in the State. However, unprecedently increasing trend of population and its addition to labourforce on one hand and decrease in the availability of arable land due to increasing land slides, soil-erosion, supporting natural resources as required for sustaining agricultural production and degradation of the quality of lands due to increasing water scarcity for irrigation of farms on the other, have increased the problems for sustaining the livelihood of farming households, particularly for marginal farmers in Uttarakhand.

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- (iii) Decreasing trend in actual cover area of the forest has adversely affected the availability situation of water, as the consequences of it, the irrigated land area has been decreasing at larger extent, of about one thousand hectares per year.

(B) PRODUCTION SYSTEM:

- (I) The situation of nearly stagnation in the productivity rates of the major crops in almost the hilly districts and a significant increase in overall productivity for all crops at state level, due to the high yield rates of these crops experienced in four districts which larger part is plain and land is highly fertile, has been examined for last atleast a decade or so.
- (II) A significant level of shift in the system of cropping pattern has been visualised in both plain and the hilly areas of the state, but at a higher extent in hilly areas as compared to the plain areas.
- (III) Utilisation of available land in the production of high value commercial crops such as fruits, pulses and off-season vegetables is consistantly increasing while it has been decreasing under the cultivation of low value traditional foodgrains such as Paddy, Madua, wheat and Barley, mainly in purely hilly areas.

(C) LAND DISTRIBUTION:

STRUCTURE OF LAND DISTRIBUTION : The cultivated land area for the production of both traditional foodgrains and the high value commercial crops is accounted for only around 13 per cent of the geographical area. This small land, which major part is lacking the facility of irrigation, is distributed among 1.25 million cultivators, representing about 726 thousand farming households. The farmers are owing very small size of land for cultivation. In fact a sizeable part of it is not being utilised for both kharif and Rabi crops simultaneously because this category of land has been degraded and has lost its productive capacity at a large extent. Therefore the farmers are making the practice keeping this land as fallow for every alternate year to regain the fertility. Also, of the total size of land available with the farmers, over 64 per cent of it, comprising 90 per cent in hilly areas as against 24 per cent in plain areas, is not possessing the facility of irrigation. In such circumstance every category of farms in Uttaranchal could be considered as the marginal and small farms.

In the state, the total numbers of operational holdings accounts for 754 thousands, of which 97 of them are in the category of marginal and small farms and the holdings size of above 4 hectares are constituting only around 3 per cent. Average size of operational holdings is accounted for 0.94 hectares, which accounted of only 0.79 hectares in hill areas as against 1.40 hectares in the plain areas. Per cultivator average size of land area is

accounted for only 0.57 hectares which is as lower as 0.49 hectares in hilly areas and 0.94 hectares in plain areas.

Over the years, fragmentation of land holdings has been highly visualised due to unprecedently increasing trend of population and the numbers of households in the state. Significantly highest level of fragmentation of the farms has been experienced among the larger size of holdings constituting in the categories of above 4 hectares. Consequently the number of small and marginal farms are increasing very rapidly.

TABLE 1
STRUCTURE OF LAND HOLDINGS

SIZE CLASS OF HOLDINGS (Hect.)	1980-81		1990-91		% Change	
	No. of Holdings	Area	No. of Holdings	Area	No. of Holdings	Area
Upto 1.0	515319 (69.86)	175264 (24.09)	537121 (71.19)	199564 (28.07)	4.23	13.86
1.0 – 2.0	126264 (17.12)	174181 (23.94)	127022 (16.84)	177478 (24.96)	0.60	1.89
2.0 – 4.0	68910 (9.34)	187915 (25.83)	68064 (9.02)	184428 (25.94)	-1.23	-1.86
4.0 – 10.0	24683 (3.35)	138342 (19.02)	20520 (2.72)	113933 (16.02)	-16.87	-17.65
10.0 AND ABOVE	2455 (0.33)	51756 (7.11)	1771 (0.23)	35569 (5.00)	-27.86	-31.28
TOTAL	737631 (100.00)	727468 (100.00)	754498 (100.00)	710972 (100.00)	2.29	-2.27

The more striking feature are that:

- (i) Every year, the operation land area is decreasing at the rate of 0.23 per cent while the numbers of holdings are increasing at the rate of 0.30 per cent. Increase in numbers of marginal and small farms is the direct reflection of a significantly larger fragmentation and subdivision of the highest categories of farms.
- (ii) The pressure of cultivators on the farming system is consistently increasing, in fact, at much faster rate as compared to the growth of population and, also more sharply in purely hilly areas than in the plain areas (Table-2).

TABLE-2
CHANGES IN THE DISTRIBUTION OF LAND HOLDINGS

(Area in Hects.)

LAND HOLDINGS	1980-81			1990-91			Percentage Change		
	Plains	Hills	Total	Plains	Hills	Total	Plain	Hills	Total
Cultivated Area	275302	452166	727468	261787	449185	710972	(-4.91)	(-0.66)	(-2.27)
Holdings	172709	564922	737631	186359	568139	754498	7.09	0.57	2.29
Average size of holdings	1.59	0.80	0.99	1.40	0.79	0.94	-11.95	-1.25	-5.05
Percent Irrigation Area	57.21	9.74	27.70	76.36	10.42	35.94	33.47	6.98	29.75
Cultivators	190871	341380	532251	279645	922886	1252531	46.51	170.34	135.33
Per Cultivator Land	1.44	1.32	1.37	0.94	0.49	0.57	-34.72	-62.88	-58.39

On the contrary to these facts the per cultivator average size of cultivated land area has decreased from 1.37 hectare to 0.57s hectare showing the annual decline of 5.84 per cent during the last one decade. It is, again, declining at higher level in purely hilly districts as compared to districts with plain areas.

OPTIONS FOR IMPROVING LIVELIHOOD:

In the context of certain problems existing in the farming system and various constraints emerging in increasing the size of production and productivity of different field crops the diversification of farming system through making basic shift of available land from the production of low value food crops to high value commercial crops such as, vegetables and pulses could be suggested as an important option for sustaining the livelihood of the marginal and small farmers in Uttarakhand. Since, it has been well recognised that shifting of available land from the growing of traditional food crops to the cultivation of fruits and vegetable has been proving a vary economic affairs in terms of both employment generation and increasing the incomes of the farmers in the State. Utilisation of one hectare land for the cultivation of fruits is found to provide 77 per cent more employment and 58 per cent more income than the cultivation of agricultural crops (Mehta 1997).

Uttarakhand has proved to be suitable for growing different types of temperate tropical and sub-tropical fruits (ICIMOD, 1989). The State has wide scope for growing different kinds of off-vegetables, flowers, ornamental plants, mushrooms

and medicinal and tea plants in its different climatic zones. The temperate fruits such as apples, pears, peaches, plums, apricot, cherries and walnuts are grown at elevation of from 1000 to 3000 m.e.s.l. and at elevations ranging from 3000 to 14000 metres crops such as citrus, mangoes, litchi, banana, guava, papaya, strawberry and different local variety of fruits are successfully grown.

FRUITS - AREA, PRODUCTION AND PRODUCTIVITY:

The land area under the production of different fruits is 188 thousand hectares, accounting for 14.96 per cent of the total cultivated area. Taking 1984-85, as the base year, the indices of land area for fruits have increased around 132 per cent points during 1998-99. The total production of fruits in Uttarakhand has increased from 0.33 million tonnes in 1984-85 to 0.52 million tonnes in 1998-99 indicating the growth of 57.58 per cent. The per hectare productivity which was 2.30 tonnes in

TABLE 3
AREA, PRODUCTION AND PRODUCTIVITY OF FRUITS

ITEM	1984-85	1992-93	1993-94	1994-95	1995-96	1996-97	1998-99	Growth Percentage
Area (Lakh hect.)	1.42 (100.0)	1.76 (123.84)	1.79 (126.06)	1.82 (128.17)	1.84 (129.58)	1.86 (130.99)	1.88 (132.39)	32.39
Production (Lakh Tonnes)	3.30 (100.0)	4.62 (140.00)	4.69 (142.12)	4.95 (150.00)	5.02 (152.12)	5.10 (154.55)	5.20 (157.88)	57.58
Productivity (Tonnes/Hect.)	2.30 (100.0)	2.62 (113.91)	2.62 (113.91)	2.72 (118.26)	2.73 (118.70)	2.75 (119.57)	2.77 (120.43)	2.43

1984-85, has achieved the level of 2.77 tonnes/hectare in 1998-99, showing a tremendous increase of 20.43 per cent. Apple are the most important among the various fruits grown in the state and are cultivated on 55.53 thousand hectares of land which accounts for 28.72 per cent of the total land area of all fruits.

VEGETABLES - AREA, PRODUCTION AND PRODUCTIVITY:

Uttaranchal is possessing an area specific comparative advantages over the plain areas in terms of the production of different variety of seasonal vegetables, particularly potato and tomato. Therefore land area under the production of vegetable have been consistently increasing at much larger extent. Between the year 1984-85 and 1996-97, the land area of vegetables has increased from 46 thousand hectares to 90 thousand hectares. Annually, on an average 3.7 thousand hectares land is additionally been brought out under the production of various vegetables, mainly potatoes in the state during the last twelve years. The volume of production of vegetables is revealed increasing at more sharply than the increase of land area. The productivity of all vegetables together has also increased from 6.06 tonnes/hect. In 1984-85 to 9.08 tonnes/hectares during 1996-97 showing an overall increase of 49.83 per cent.

Thus it is clearly indicated the fact that the farmers are increasingly shifting their available land into the /production of different vegetables instead of its utilisation in growing traditional crops. Increasing returns from the growing of vegetables has

TABLE 4
AREA, PRODUCTION AND PRODUCTIVITY OF VEGETABLES

ITEMS	1984-85	1992-93	1993-94	1994-95	1995-96	1996-97	Growth Percentages
Area (Lakh hect.)	0.46 (100.0)	0.80 (173.91)	0.84 (182.61)	0.87 (169.13)	0.88 (191.30)	0.90 (185.65)	95.65
Production (Lakh Tonnes)	2.79 (100.0)	6.87 (246.23)	7.18 (257.36)	7.59 (268.82)	7.90 (283.15)	8.17 (293.83)	192.83
Productivity (Tonnes/Hect.)	6.06 (100.0)	8.59 (141.74)	8.55 (141.09)	8.62 (142.24)	8.98 (148.18)	98.08 (149.83)	49.83

influenced them to provide increasing attention in adopting various improved technologies and methods require for upholding and strengthening farm productivity of vegetable. As the consequences it has increased the productivity rates of different vegetables over the years. If this trend of success in growing vegetables is sustained the growing problem of poverty among marginal and small farms can be reduced at substantial level. However, at present, lack of proper marketing facilities and the absence of post-harvest technologies and facility of storage are the serious constraints to a more rapid and systematic development of vegetable cultivation in the state.

SHIFT IN LAND USE:

Over the years, the farming community has been significantly shifting their available cultivated land area from the production of low value traditional crops,

such as wheat, paddy, maduava and sawan to the production of different fruits vegetables and pulses so as to maximise the returns from their small size of holdings.

The land area under the production of foodgrains has been declining at the rate of 0.94 per cent while it has been increasing at 1.50 per cent for vegetables, 0.81 per cent for fruits and 0.80 per cent for the pulses. In all, during the period of last five years, around 7031 hectares additional land area has been diverted by the farmers from the cultivation of food crops to the cultivation of fruits and vegetables in the state.

Thus the farming community owning either small or large size of holding has become quite aware about the economic use of their available cultivated land. In fact, in some areas nearly 63 per cent of fruit growers have expressed a desire to diversify and expand the size of their orchards by additional plantation of different variety of fruits. Farmers who are currently not engaged in growing fruits would also like to do so, but the problems of marketing possess a major constraints in diverting their land from the cultivation of traditional low value crops to the plantation of fruit trees (Mehta 1988).

THE TASK AHEAD:

Thus, It is well depicted that the mobilisation of public support towards initiating for diversification of farming system through shifting land use under the productiuon of fruits and vegetables would not be a difficult task. Because the farmers are very keen to bring certain changes in the farming system and are making great efforts in this regard even without any proper support of either the local institutions or the Government. However, some farmers, those possessing small size of land holdings are hesitant to adopt changes because of high production and market risks; and if this is not handled properly, it could deprive farmers even of the limited subsistence they now derive from food crops.

MARKETING ARRANGEMENTS:

The advance or pre-arranged sale of orchard crops is the most prevalent marketing arrangement in the state; and it favours fruit contractors rather than fruit growers, as the contracted prices are usually significantly lower than market prices (Mehta 1988). At the same time fruit grown in remote and less accessible areas do not find a convenient market. Collection of fruits from these areas even by contractors is difficult. As a result, most of it used for either domestic consumption or goes waste.

The emerging marketing problems could be solved by organising fruit growers to form co-operative societies and developing of fruit mandies (markets) and marketing centres in

different fruit growing areas. This could be a necessary and effective step for the development of horticulture in Uttarakhand. This would also prevent perpetuation of the inequitable linkages prevailing between fruit growers and contractors. As a result of poor economic conditions of many fruit growers, the system of pre-harvest contracting is perpetuated because they receive part of the payment in advance from the pre-harvest contractors, so as to purchase fertilizers, chemicals, pesticides and medicines as required before harvesting fruits. Marketing arrangements, therefore, would need to ensure sale of fruits at remunerative prices and to make available crop-credit from banks and other financial institutions. A network of co-operative societies including primary credit societies, would probably be most effective system for these purposes.

(II) SUPPORT SERVICES:

In addition to these initiatives, it would be also equally necessary to provide easy access to support services, such as seeds, fertilizers, production techniques, improved agricultural services and methods, and marketing infrastructure in order to increase yield levels and minimise the risks involved in the shift from food-centred subsistence production to niche-based commercial production.

(iii) MEASURES FOR MEETING OPPORTUNITY COST OF SHIFTING LAND

- (a) **INTER CROPPING:** The fruit trees require a duration of nearly five to six years to develop before they can bear fruits and earn income.

Therefore, the shift from the production of foodgrains to the plantation of fruits would initially mean hardship for the farmers, particularly those owning very small pieces of land. So the farmers should be encouraged and helped to carry out inter-cropping on land where fruit trees are grown. Various high-value commercial crops have to be identified by carrying out research on the quality and suitability of soils for growing particular crops. A study by Karane (1996) reveals that studies carried out over a period of four years on raising pecan nut trees in different crop sequences have clearly shown that the soybeans during kharif crop season and peas in rabbi crops season successfully complemented the nut trees. In fact, soybean performed consistently well in association with trees rather than a sole crop. Inter-cropping in between fruit trees with oil seeds and local varieties of pulses has been quite successful over a period of four to five years in most orchards in Nainital and Almora, in fact the value of pulses and oil seeds grown as an inter-crop is estimated to be much high than when traditional crops were grown on the same land. Nevertheless in some areas, around 20 to 35 per cent loss in production of agricultural crops as a result of inter-cropping with fruit trees has been estimated (Mehta 1996). The yield will of course be relatively lower than while cultivating food crops without fruit trees, but at least some food requirement will be met.

(b) **FOOD AND EMPLOYMENT SECURITY:** In addition, on going employment programmes run by the central and state governments, such as Jawahar Rozgar Yojana, especially its employment assurance scheme, which aims to provide income to poor households through wage-employment, could be applied, with suitable modifications, if necessary, to provide food security to farmers who are shifting to non-food crops. Further, shifting to cultivation of fruits and vegetables means that the public distribution system should be strengthened to ensure the adequate quantities of food grains are available and at affordable prices.